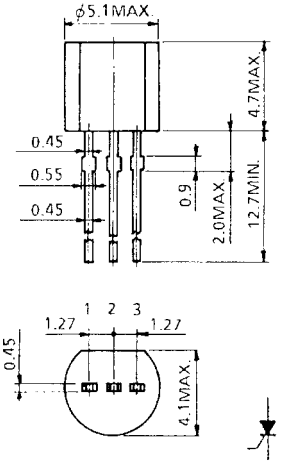
TOSHIBA THYRISTOR SILICON PLANAR TYPE

SF0R5G43,SF0R5J43

LOW POWER SWITCHING AND CONTROL APPLICATIONS

- Repetitive Peak Off−State Voltage : V_{DRM} = 400,600V
  Repetitive Peak Reverse Voltage : V_{RRM} = 400,600V
- Average On−State Current : $I_{T\ (AV)}$ = 500mA
- Plastic Mold Type.

Unit: mm



1. CATHODE
2. GATE
3. ANODE

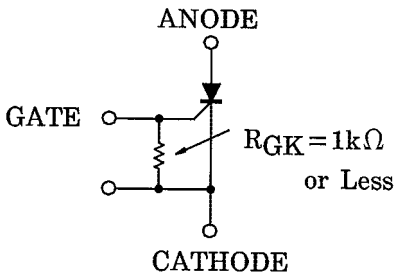
JEDEC	TO−92
JEITA	SC−43
TOSHIBA	13−5A1D

Weight: 0.2g

MAXIMUM RATINGS

CHARACTERISTIC		SYMBOL	RATING	UNIT
Repetitive Peak Off−State Voltage and Repetitive Peak Reverse Voltage (R_{GK} = 1kΩ)	SF0R5G43	V_{DRM} V_{RRM}	400	V
	SF0R5J43		600	
Non−Repetitive Peak Reverse Voltage (Non-Repetitive < 5ms, R_{GK} = 1kΩ, T_j = 0~110°C)	SF0R5G43	V_{RSM}	500	V
	SF0R5J43		720	
Average On−State Current (Half Sine Waveform Tc = 30°C)		$I_{T\ (AV)}$	500	mA
R.M.S On−State Current		$I_{T\ (RMS)}$	800	mA
Peak One Cycle Surge On−State Current (Non-Repetitive)		I_{TSM}	7 (50Hz)	A
			8 (60Hz)	
I^2t Limit Value		I^2t	0.25	A^2s
Peak Gate Power Dissipation		P_{GM}	1	W
Average Gate Power Dissipation		$P_{G\ (AV)}$	0.01	W
Peak Forward Gate Voltage		V_{FGM}	8	V
Peak Reverse Gate Voltage		V_{RGM}	−5	V
Peak Forward Gate Current		I_{GM}	500	mA
Junction Temperature		T_j	−65~125	°C
Storage Temperature Range		T_{stg}	−65~125	°C

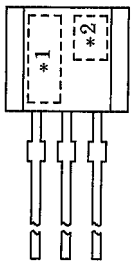
Note: Should be used with gate resistance as follows.



ELECTRICAL CHARACTERISTICS (Ta = 25°C)

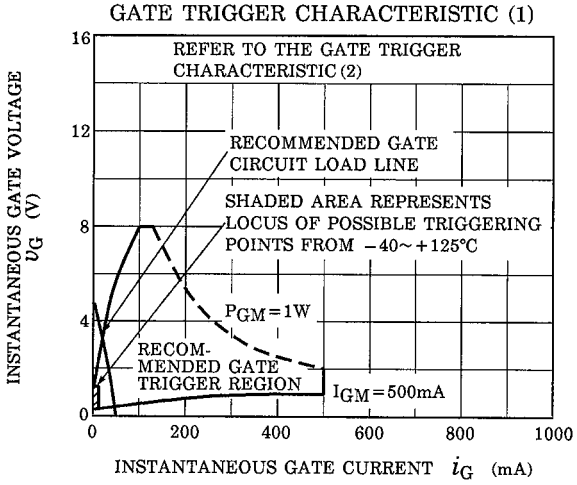
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT
Repetitive Peak Off−State Current and Repetitive Peak Reverse Current	I_{DRM} I_{RRM}	V_{DRM} = V_{RRM} = Rated, R_{GK} = 1kΩ, T_j = 125°C	—	—	50	μA
Peak On−State Voltage	V_{TM}	I_{TM} = 1A	—	—	1.5	V
Gate Trigger Voltage	V_{GT}	V_D = 6V, R_L = 100Ω, R_{GK} = 1kΩ	—	—	0.8	V
Gate Trigger Current	I_{GT}		—	—	200	μA
Gate Non−Trigger Voltage	V_{GD}	V_D = Rated, R_{GK} = 1kΩ, T_a = 125°C	0.2	—	—	V
Holding Current	I_H	R_L = 100Ω, R_{GK} = 1kΩ	—	—	5	mA
Thermal Resistance	$R_{th\ (j-c)}$	Junction to Case	—	—	125	°C / W
	$R_{th\ (j-a)}$	Junction to Ambient	—	—	230	

MARKING

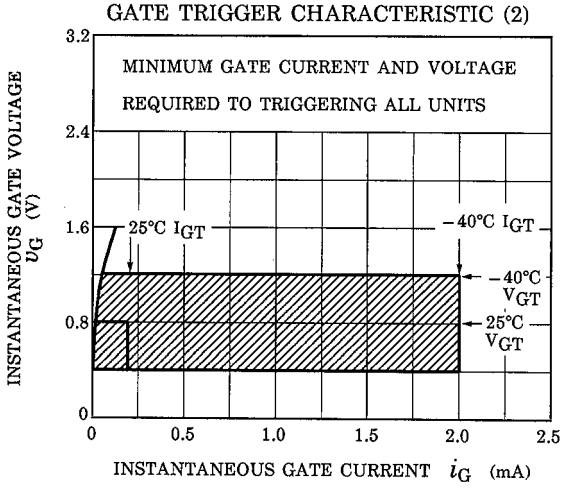


NUMBER	SYMBOL		MARK
*1	TYPE	SF0R5G43	F0R5G
		SF0R5J43	F0R5J
*2	Lot Number Month (Starting from Alphabet A) Year (Last Decimal Digit of the Current Year)		Example 8A: January 1998 8B: February 1998 8L: December 1998

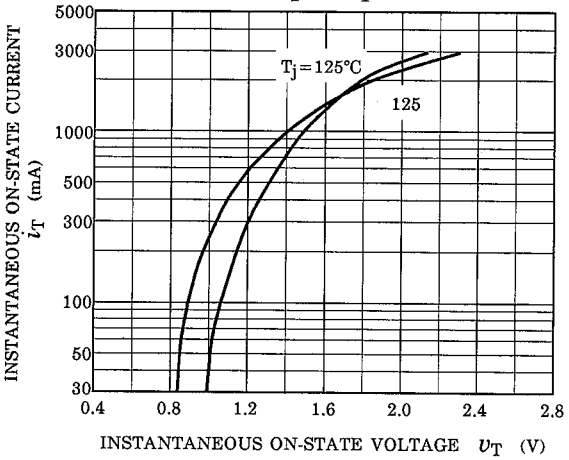
GATE TRIGGER CHARACTERISTIC (1)



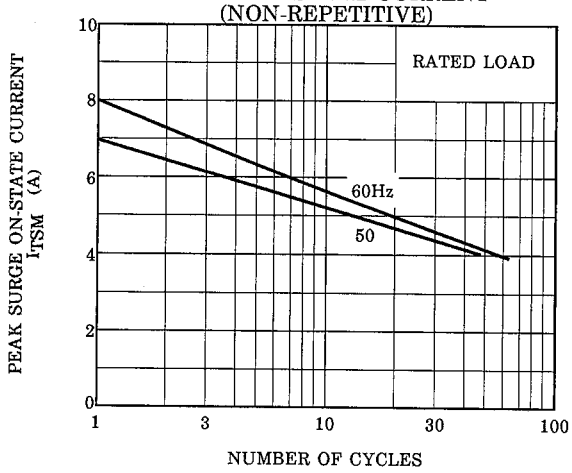
GATE TRIGGER CHARACTERISTIC (2)



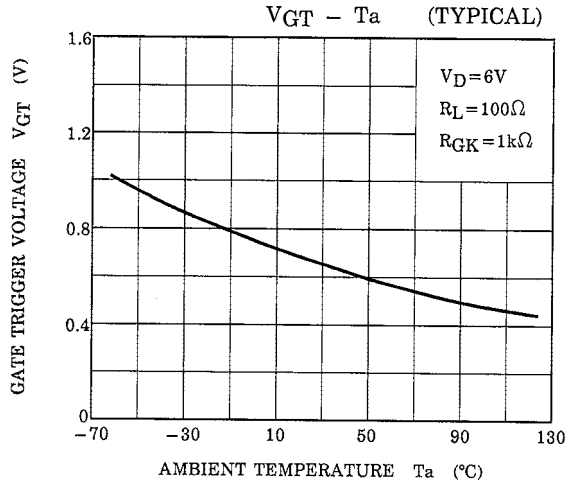
$i_T - v_T$



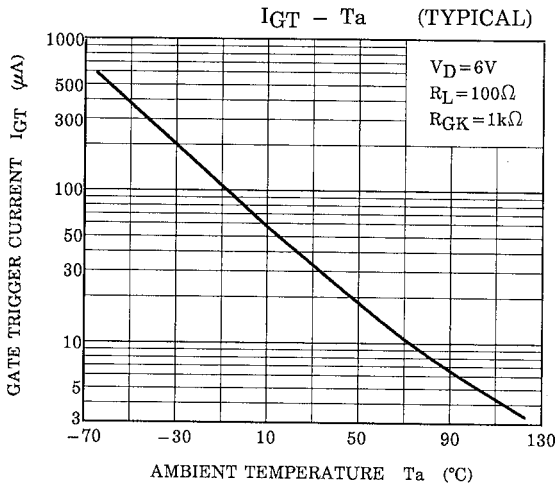
SURGE ON-STATE CURRENT (NON-REPETITIVE)



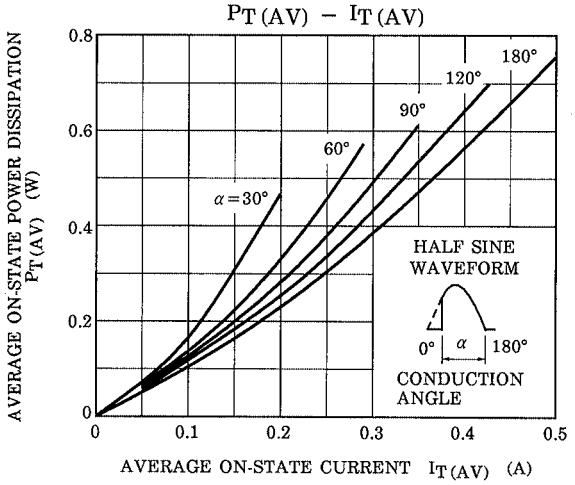
V_{GT} − Ta (TYPICAL)



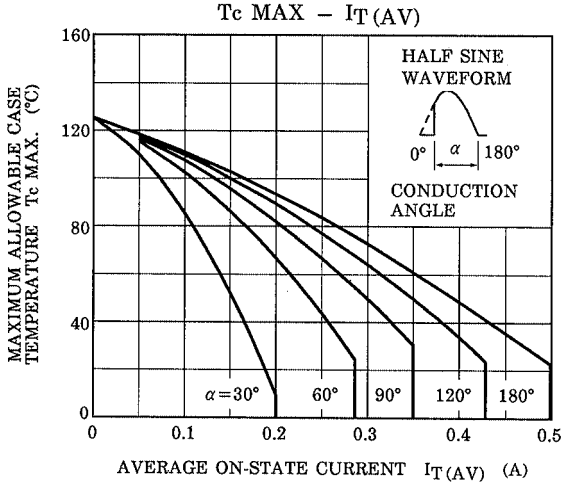
I_{GT} − Ta (TYPICAL)



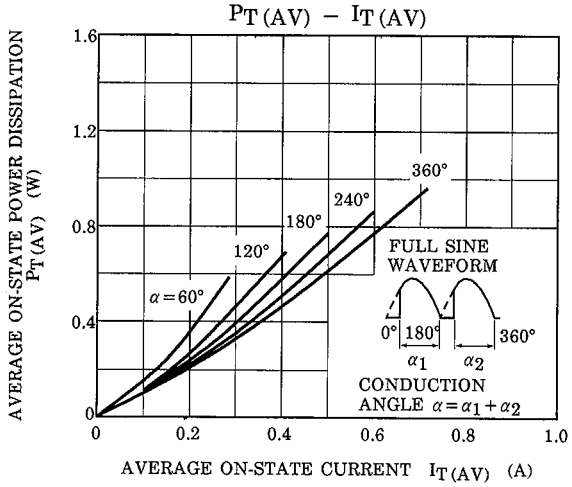
$P_{T(AV)} - I_{T(AV)}$



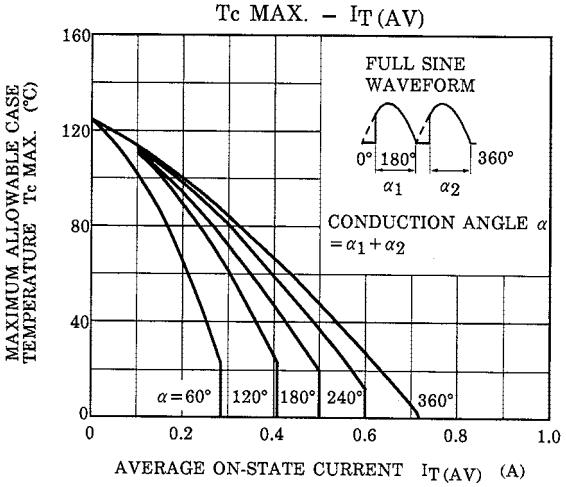
T_C MAX $- I_{T(AV)}$



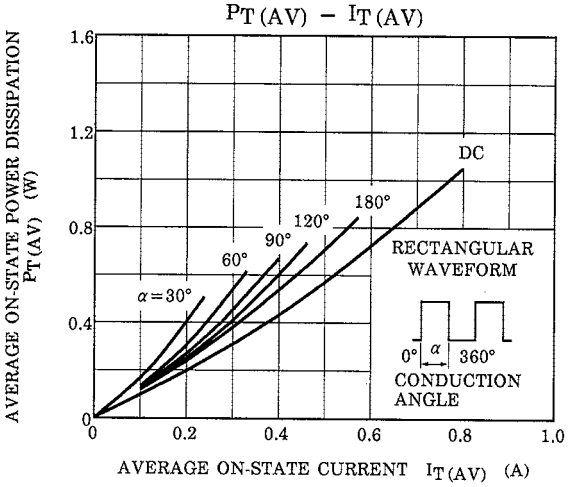
$P_{T(AV)} - I_{T(AV)}$



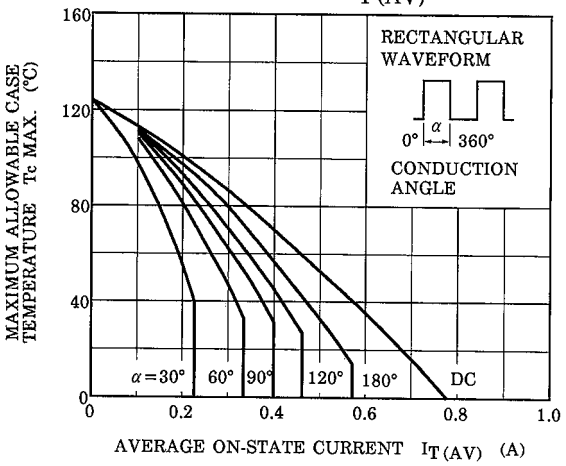
T_C MAX. $- I_{T(AV)}$

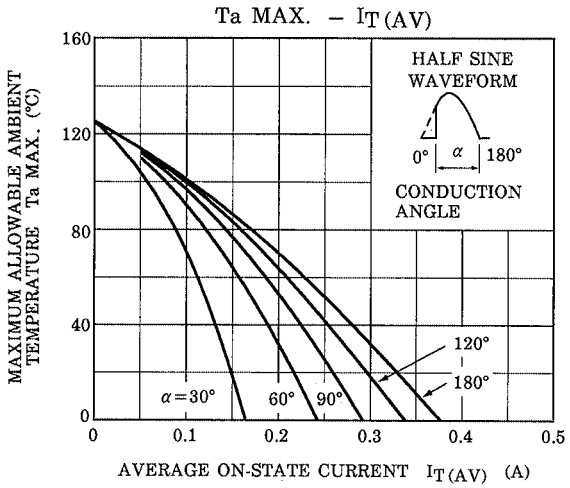


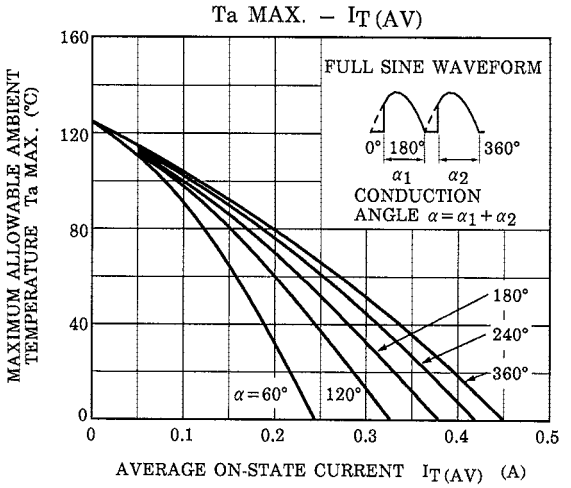
$P_{T(AV)} - I_{T(AV)}$

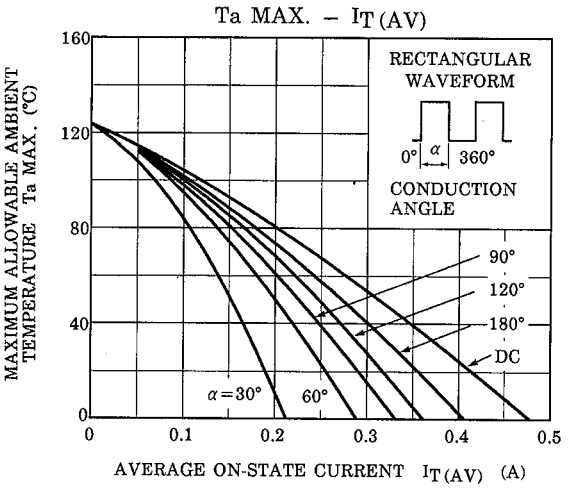


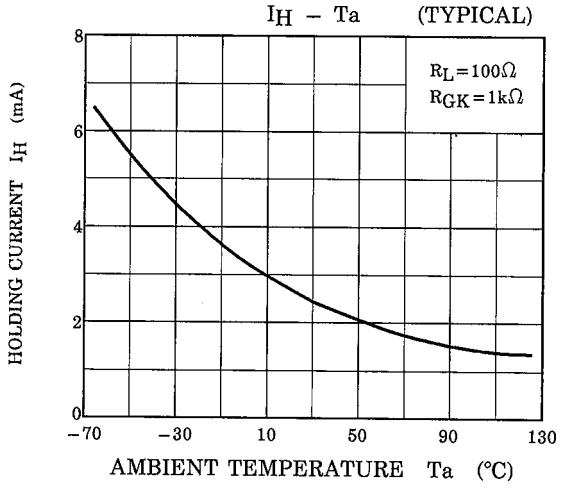
T_C MAX. $- I_{T(AV)}$

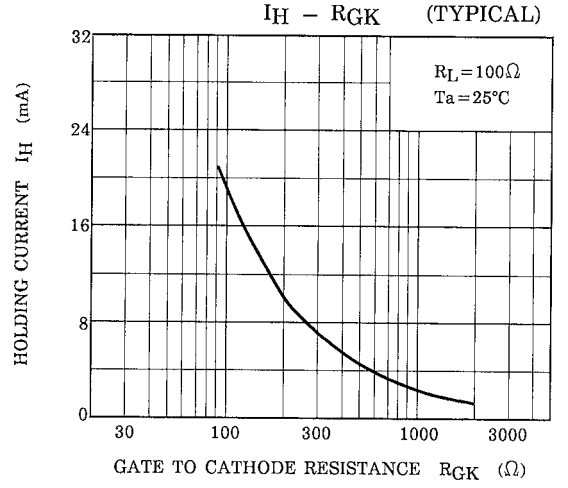


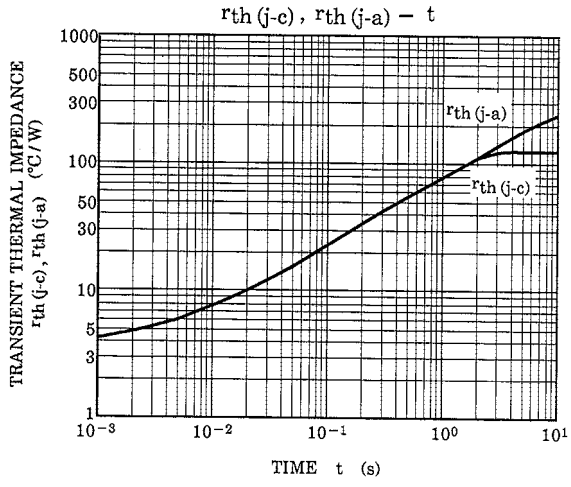

Ta MAX. – IT (AV)
MAXIMUM ALLOWABLE AMBIENT TEMPERATURE Ta MAX. (°C)
HALF SINE WAVEFORM
0° α 180°
CONDUCTION ANGLE
α=30°
60°
90°
120°
180°
AVERAGE ON-STATE CURRENT IT (AV) (A)


Ta MAX. – IT (AV)
MAXIMUM ALLOWABLE AMBIENT TEMPERATURE Ta MAX. (°C)
FULL SINE WAVEFORM
0° 180° 360°
α1 α2
CONDUCTION ANGLE α=α1+α2
α=60°
120°
180°
240°
360°
AVERAGE ON-STATE CURRENT IT (AV) (A)


Ta MAX. – IT (AV)
MAXIMUM ALLOWABLE AMBIENT TEMPERATURE Ta MAX. (°C)
RECTANGULAR WAVEFORM
0° α 360°
CONDUCTION ANGLE
α=30°
60°
90°
120°
180°
DC
AVERAGE ON-STATE CURRENT IT (AV) (A)


IH – Ta (TYPICAL)
HOLDING CURRENT IH (mA)
RL=100Ω
RGK=1kΩ
AMBIENT TEMPERATURE Ta (°C)


IH – RGK (TYPICAL)
HOLDING CURRENT IH (mA)
RL=100Ω
Ta=25°C
GATE TO CATHODE RESISTANCE RGK (Ω)


rth (j-c), rth (j-a) – t
TRANSIENT THERMAL IMPEDANCE rth (j-c), rth (j-a) (°C/W)
rth (j-a)
rth (j-c)
TIME t (s)

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